



**United States
Department of
Agriculture**

**Agricultural
Marketing
Service**

**Dairy
Division**

United States Standards for Grades of Swiss Cheese, Emmentaler Cheese

Effective September 28, 1987

United States Standards for Swiss Cheese, Emmentaler Cheese¹

Definitions

§ 58.2570 *Swiss cheese, Emmentaler cheese.*

(a) For the purpose of this subpart, the words “Swiss” and “Emmentaler” are interchangeable.

(b) Swiss cheese is cheese made by the Swiss process or by any other procedure which produces a finished cheese having the same physical and chemical properties as cheese produced by the Swiss process. It is prepared from milk and has holes, or eyes, developed throughout the cheese by microbiological activity. It contains not more than 41 percent of moisture, and its solids contain not less than 43 percent of milkfat. It is not less than 60 days old and conforms to the provisions of 21 CFR 133.195, “Cheese and Related Cheese Products,” Food and Drug Administration.

§ 58.2571 *Styles.*

(a) *Rind.* The cheese is completely covered by a rind sufficient to protect the interior of the cheese.

(b) *Rindless.* The cheese is properly enclosed in a wrapper or covering which will not impart any objectionable flavor or color to the cheese. The wrapper or covering is sealed with a sufficient overlap or satisfactory closure to exclude air. The wrapper or covering is of sufficiently low permeability to water vapor and air so as to prevent the formation of a rind through contact with air during the curing and holding periods.

U.S. Grades

§ 58.2572 *Nomenclature of U.S. grades.*

The nomenclature of the U.S. grades is as follows:

(a) U.S. Grade A.

(b) U.S. Grade B.

¹Compliance with these standards does not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act.

(c) U.S. Grade C.

§ 58.2573 *Basis for determination of U.S. grades.*

(a) The determination of U.S. grades of Swiss cheese shall be on the basis of rating the following quality factors:

- (1) Flavor,
- (2) Body,
- (3) Eyes and texture,
- (4) Finish and appearance, and
- (5) Color.

(b) The rating of each quality factor shall be established on the basis of characteristics present in a randomly selected sample representing a vat of cheese. In the case of institutional-size cuts, samples may be selected on a lot basis.

(c) To determine flavor and body characteristics, the grader will examine a full trier plug of cheese withdrawn at the approximate center of one of the largest flat surface areas of the sample. For some institutional-size samples, it may not be possible to obtain a full trier plug. When this occurs, a U.S. grade may be determined from a smaller portion of a plug.

(d) To determine eyes and texture as well as color characteristics, the wheel or block shall be divided approximately in half, exposing two cut surfaces, for examination. The exposed cut surfaces of institutional-size packages shall be used to determine eye and texture as well as color characteristics.

(e) A U.S. grade may be assigned to institutional-size packages. In some instances, it may not be possible to obtain a full trier plug. When this occurs, a U.S. grade determination may be assigned on a smaller portion of a plug. The exposed cut surfaces of these size packages shall be used to determine eye and texture as well as color characteristics.

(f) The final U.S. grade shall be established on the basis of the lowest rating of any one of the quality factors.

§58.2574 *Specifications for U.S. grades.*

(a) *U.S. grade A.* U.S. grade A Swiss cheese shall conform to the following requirements (See Tables I, II, III, IV, and V of this section):

(1) *Flavor:* Shall be a pleasing and desirable characteristic Swiss cheese flavor, consistent with the age of the cheese, and free from undesirable flavors.

(2) *Body:* Shall be uniform, firm, and smooth.

(3) *Eyes and texture:* The cheese shall be properly set and shall possess well-developed round or slightly oval-shaped eyes which are uniformly distributed. The majority of the eyes shall

be $\frac{11}{16}$ to $\frac{13}{16}$ inch in diameter. The cheese may possess the following eye characteristics to a very slight degree: dull, rough, and shell; and the following texture characteristics to a very slight degree: checks and picks.

(4) *Finish and appearance*--(i) *Rind*. The rind shall be sound, firm, and smooth, providing good protection to the cheese. The surface of the cheese may exhibit mold to a very slight degree. There shall be no indication that mold has penetrated into the interior of the cheese.

(ii) *Rindless*. Rindless blocks of Swiss cheese should not be less than $6\frac{1}{2}$ inches nor more than $8\frac{1}{2}$ inches in height, reasonably uniform in size, and well shaped. The wrapper or covering shall adequately and securely envelop the cheese, be neat, unbroken, and fully protect the surface of the cheese, but may be slightly wrinkled. The surface of the cheese may exhibit mold to a very slight degree. There shall be no indication that mold has penetrated into the interior of the cheese.

(5) *Color*: Shall be natural, attractive, and uniform.

(b) *U.S. grade B*. U.S. grade B Swiss cheese shall conform to the following requirements (See Tables I, II, III, IV, and V of this section):

(1) *Flavor*: Shall be a pleasing and desirable characteristic Swiss cheese flavor, consistent with the age of the cheese, and free from undesirable flavors. The cheese may possess the following flavors to a slight degree: acid, bitter, feed, flat, and utensil.

(2) *Body*: Shall be uniform, firm, and smooth. The cheese may possess a slight weak body.

(3) *Eyes and texture*: The cheese shall possess well-developed round or slightly oval-shaped eyes. The cheese may possess the following eye characteristics to a very slight degree: dead eyes, nesty and small eyed; and the following to a slight degree: dull, frogmouth, one sided, overset, rough, shell, underset, and uneven. The cheese may possess the following texture characteristics to a slight degree: checks, picks and streuble.

(4) *Finish and appearance*--(i) *Rind*. The rind shall be sound, firm, and smooth; providing good protection to the cheese. The cheese may exhibit the following characteristics to a slight degree: huffed, mold, soiled, uneven, and wet rind. There shall be no indication that mold has penetrated into the interior of the cheese.

(ii) *Rindless*. Rindless blocks of Swiss cheese should not be less than $6\frac{1}{2}$ inches nor more than $8\frac{1}{2}$ inches in height. The wrapper or covering shall adequately and securely envelop the cheese, be neat, unbroken and fully protect the surface, but may be slightly wrinkled. The cheese may exhibit the following characteristics to a slight degree: huffed, mold, uneven, and wet surface. There shall be no indication that mold has penetrated into the interior of the cheese.

(5) *Color*: The cheese may possess to a slight degree a bleached surface.

(c) *U.S. grade C*. U.S. grade C Swiss cheese shall conform to the following requirements (See Tables I, II, III, IV, and V of this section):

(1) *Flavor*: Shall possess a characteristic Swiss cheese flavor which is consistent with the age of the cheese. The cheese may possess the following flavors to a slight degree: barny, flat, fruity, rancid, metallic, old milk, onion, sour, weedy, whey-taint, and yeasty; and the following to a definite degree: acid, bitter, feed, and utensil.

(2) *Body*: Shall be uniform and may possess the following characteristics to a slight degree: coarse, pasty, and short; and to a definite degree the cheese may be weak.

(3) *Eyes and texture*: The cheese may possess the following eye characteristics to a slight degree: afterset, cabbage, collapsed, irregular, large eyed, and small eyed, and the following to a definite degree: dead eyes, dull, frog mouth, nesty, rough, one sided, overset, shell, underset, and uneven. The cheese may possess the following texture characteristics to a slight degree: gassy, splits and sweet holes; and the following to a definite degree: checks, picks and streuble.

(4) *Finish and appearance*--(i) *Rind*. The rind shall be sound, providing good protection to the cheese. The cheese may exhibit the following characteristics to a slight degree: checked rind, and soft spots; and the following to a definite degree: huffed, mold, soiled, uneven, and wet rind. There shall be no indication that mold has penetrated into the interior of the cheese.

(ii) *Rindless*. The wrapper or covering shall adequately and securely envelop the cheese, be unbroken, fully protect the surface and may be wrinkled. The cheese may exhibit a very slight soiled surface and contain soft spots to a slight degree. The cheese may possess the following characteristics to a definite degree: huffed, mold, uneven, and wet surface. There shall be no indication that mold has penetrated into the interior of the cheese.

(5) *Color*. The cheese may possess the following color characteristics to a slight degree: acid cut, bleached, colored spots, dull or faded, mottled and pink ring; and to a definite degree bleached surface.

Table I.--Classification of Flavor

Identification of flavor characteristics	U.S. Grade		
	A	B	C
Acid	-----	S	D
Barny	-----	-----	S
Bitter	-----	S	D
Feed	-----	S	D
Flat	-----	S	D
Fruity	-----	-----	S
Rancid	-----	-----	S
Metallic	-----	-----	S
Old Milk	-----	-----	S
Onion	-----	-----	S
Sour	-----	-----	S
Utensil	-----	S	D
Weedy	-----	-----	S
Whey-Taint	-----	-----	S
Yeasty	-----	-----	S

S--Slight.

D--Definite.

Table II.--Classification of Body

Identification of body characteristics	U.S. Grade		
	A	B	C
Coarse	-----	-----	S
Pasty	-----	-----	S
Short	-----	-----	S
Weak	-----	S	D

S--Slight.

D--Definite.

Table III.--Classification of Eyes and Texture
(For the evaluations of cut surfaces)

Identification of eyes and texture characteristics	U.S. Grade		
	A	B	C
Afterset	-----	-----	S
Cabbage	-----	-----	S
Checks	VS	S	D
Collapsed	-----	-----	S
Dead	-----	VS	D
Dull	VS	S	D
Frog mouth	-----	S	D
Gassy	-----	-----	S
Irregular	-----	-----	S
Large eyed	-----	-----	S
Nesty	-----	VS	D
One sided	-----	S	D
Overset	-----	S	D
Picks	VS	S	D
Rough	VS	S	D
Shell	VS	S	D
Small eyed	-----	VS	S
Splits	-----	-----	D
Streuble	VS	S	D
Sweet holes	-----	-----	S
Underset	-----	S	D
Uneven	-----	S	D

VS--Very Slight.

S--Slight.

D--Definite.

Table IV.--Classification of Finish and Appearance

Identification of finish and appearance characteristics	U.S. Grade		
	A	B	C
Checked rind	-----	-----	S
Huffed	-----	S	D
Mold on rind surface	VS	S	D
Mold under wrapper or covering	VS	S	D
Soft spots	-----	-----	S
Soiled surface (Rind)	-----	S	D
Soiled surface (Rindless)	-----	-----	VS
Uneven	-----	S	D
Wet rind	-----	S	D
Wet surface (Rindless)	-----	S	D

VS--Very Slight

S--Slight.

D--Definite.

Table V.--Classification of Color

Identification of color characteristics	U.S. Grade		
	A	B	C
Acid cut	-----	-----	S
Bleached surface	-----	S	D
Colored spots	-----	-----	S
Dull or faded	-----	-----	S
Mottled	-----	-----	S
Pink ring	-----	-----	S

S--Slight.

D--Definite.

§ 58.2575 *U.S. grade not assignable.*

Swiss cheese shall not be assigned a U.S. grade for one or more of the following reasons:

- (a) Fails to meet or exceed the requirements for U.S. Grade C.
- (b) Fails to meet composition, minimum age, or other requirements of the Food and Drug Administration.
- (c) Produced in a plant found on inspection to be using unsatisfactory manufacturing practices, equipment, or facilities, or to be operating under unsanitary plant conditions.
- (d) Produced in a plant which has not been USDA inspected and approved.

Explanation of Terms

§ 58.2576 *Explanation of terms.*

(a) With respect to style:

- (1) *Rind*.--Cheese which has a hard protective outer layer formed by drying the cheese surface and by the addition of salt (usually wheel shaped).
- (2) *Rindless*.--Cheese which has been protected from rind formation and which is packaged with an impervious type of wrapper or covering enclosing the cheese (usually cube or rectangular shaped).
- (3) *Institutional-size packages*.--Multipound, wrapped portions of cheese, generally cut from a larger piece, intended for use by restaurants, delicatessens, schools, and etc.

(b) With respect to flavor:

- (1) *Slight*.--Detected only upon critical examination.
- (2) *Definite*.--Not intense but detectable.
- (3) *Undesirable*.--Identifiable flavors in excess of the intensity permitted, or those flavors not listed.
- (4) *Acid*.--Sharp and puckery to the taste, characteristic of lactic acid.
- (5) *Barny*.--A flavor characteristic of the odor of a cow stable.
- (6) *Bitter*.--A distasteful flavor similar to the taste of quinine.
- (7) *Feed*.--Feed flavors (such as alfalfa, sweet clover, silage, or similar feed) in milk carried through into the cheese.
- (8) *Flat*.--Insipid, practically devoid of any characteristic Swiss cheese flavor.
- (9) *Fruity*.--A sweet fruit-like flavor resembling apples; generally increasing in intensity as the cheese ages.
- (10) *Rancid*.--A flavor suggestive of rancidity or butyric acid, sometimes associated with a bitterness.

(11) *Metallic*.--A flavor having qualities suggestive of metal, imparting a puckery sensation.

(12) *Old Milk*.--Lacks freshness.

(13) *Onion*.--This flavor is recognized by the peculiar taste and odor suggestive of its name. Present in milk or cheese when the cows have eaten onions, garlic or leeks.

(14) *Sour*.--An acid, pungent flavor resembling vinegar.

(15) *Utensil*.--A flavor that is suggestive of improper or inadequate washing and sanitizing of milking machines, utensils or factory equipment.

(16) *Weedy*.--A flavor due to the use of milk which possesses a common weedy flavor. Present in cheese when cows have eaten weedy feed or grazed on common weed-infested pastures.

(17) *Whey-Taint*.--A slightly acid taste and odor characteristic of fermented whey, caused by too slow expulsion of whey from the curd.

(18) *Yeasty*.--A flavor indicating yeast fermentation.

(c) With respect to body:

(1) *Slight*.--Detected only upon critical examination.

(2) *Definite*.--Not intense but detectable.

(3) *Smooth*.--Feels silky; not dry and coarse or rough.

(4) *Firm*.--Feels solid, not soft or weak.

(5) *Coarse*.--Feels rough, dry and sandy.

(6) *Pasty*.--Usually weak body and when the cheese is rubbed between the thumb and fingers it becomes sticky and smeary.

(7) *Short*.--No elasticity to the plug when rubbed between the thumb and fingers.

(8) *Uniform*.--Not variable.

(9) *Weak*.--Requires little pressure to crush, is soft but is not necessarily sticky like pasty cheese.

(d) With respect to eyes and texture in general:

(1) *Blind*.--No eye formation present.

(2) *Set*.--The number of eyes in any given area of cheese.

(3) *Well developed eyes*.--Eyes perfectly developed, glossy or velvety, with smooth even walls, round or slightly oval in shape, and fairly uniform in distribution throughout the cheese.

(e) With respect to eyes and texture as it relates to cabbage, collapsed, dead, dull, frog mouth, irregular, rough and shell:

(1) *Very Slight*.--Characteristic exhibited in less than 5% of the eyes.

(2) *Slight*.--Characteristic exhibited in 5% or more but less than 10% of the eyes.

(3) *Definite*.--Characteristic exhibited in 10% or more but less than 20% of the eyes.

(4) *Cabbage*.--Cheese having eyes so numerous within the major part of the cheese that they crowd each other, leaving only a paper-thin layer of cheese between the eyes, causing the cheese to have a cabbage appearance and very irregular eyes.

(5) *Collapsed*.--Eyes which have not formed properly and do not appear round or slightly oval but rather flattened and appear to have collapsed.

(6) *Dead*.--Developed eyes that have completely lost their glossy or velvety appearance.

(7) *Dull*.--Eyes that have lost some of their bright shiny luster.

(8) *Frog mouth*.--Eyes which have developed into a lenticular or spindle-shaped opening.

(9) *Irregular*.--Eyes which have not formed properly and do not appear round or slightly oval and which are not accurately described by other more descriptive terms.

(10) *Rough*.--Eyes which do not have smooth, even walls.

(11) *Shell*.--A rough nut shell appearance on the wall surface of the eyes.

(f) With respect to eyes and texture as it relates to streuble:

(1) *Very Slight*.--Extends no more than $\frac{1}{8}$ inch into the body of the cheese.

(2) *Slight*.--Extends $\frac{1}{8}$ inch or more but less than $\frac{1}{4}$ inch into the body of the cheese.

(3) *Definite*.--Extends $\frac{1}{4}$ inch or more but less than $\frac{1}{2}$ inch into the body of the cheese.

(4) *Streuble*.--An overabundance of small eyes just under the surface of the cheese.

(g) With respect to eyes and texture as it relates to checks, picks, and splits:

(1) *Very Slight*.--Infrequent occurrence, not more than 1 inch from the surface.

(2) *Slight*.--Limited occurrence, not more than 1 inch from the surface.

(3) *Definite*.--Limited occurrence throughout cheese.

(4) *Checks*.--Small, short cracks within the body of the cheese.

(5) *Picks*.--Small irregular or ragged openings within the body of the cheese.

(6) *Splits*.--Sizable cracks, usually in parallel layers and usually clean cut, found within the body of the cheese.

(h) With respect to eyes and texture as it relates to large eyed and small eyed:

(1) *Very Slight*.--Majority of the eyes less than $\frac{11}{16}$ and more than $\frac{1}{2}$ inch.

(2) *Slight*.--Majority of the eyes less than inch $\frac{1}{2}$ but more than $\frac{5}{16}$ inch or more than $\frac{13}{16}$ inch but less than 1 inch.

(3) *Large eyed*.--Eyes in excess of $\frac{13}{16}$ inch.

(4) *Small eyed*.--Eyes less than $\frac{11}{16}$ inch.

(i) With respect to eyes and texture as it relates to gassy and sweet holes:

(1) *Slight*.--No more than 3 occurrences per any given 2 square inches.

(2) *Gassy*.--Gas holes of various sizes which may be scattered.

(3) *Sweet holes*.--Spherical gas holes, glossy in appearance; usually about the size of BB shot.

(j) With respect to eyes and texture as it relates to nesty:

(1) *Very slight*.--Occurrence limited to no more than 5% of the exposed cut area of the cheese.

(2) *Slight*.--Occurrence more than 5% but less than 10% of the exposed cut area of the cheese.

(3) *Definite*.--Occurrence more than 10% but less than 20% of the exposed cut area of the cheese.

(4) *Nesty*.--An overabundance of small eyes in a localized area.

(k) With respect to eyes and texture as it relates to one-sided and uneven:

(1) *Slight*.--Eyes evenly distributed throughout at least 90% of the total cheese area.

(2) *Definite*.--Eyes evenly distributed throughout at least 75% but less than 90% of the total cheese area.

(3) *One sided*.--Cheese which is reasonably developed on one side and underdeveloped on the other as to eye development.

(4) *Uneven*.--Cheese which is reasonably developed in some areas and underdeveloped in others as to eye development.

(l) With respect to eyes and texture as it relates to afterset, overset, and underset:

(1) *Very slight*.--Number of eyes present exceed or fall short of the ideal by limited amount.

(2) *Slight*.--Number of eyes present exceed or fall short of the ideal by a moderate amount.

(3) *Afterset*.--Small eyes caused by secondary fermentation.

(4) *Overset*.--Excessive number of eyes present.

(5) *Underset*.--Too few eyes present.

(m) With respect to finish and appearance:

(1) *Very slight*.--Detected only upon very critical examination.

(2) *Slight*.--Detected only upon critical examination.

(3) *Definite*.--Not intense but detectable.

(4) *Checked rind*.--Numerous small cracks or breaks in the rind.

(5) *Huffed*.--The cheese becomes rounded or oval in shape instead of flat.

(6) *Mold on rind surface*.--Mold spots or areas which have formed on the rind surface.

(7) *Mold under wrapper or covering*.--Mold spots or area that have formed under the wrapper or on the cheese.

(8) *Soft spots*.--Spots which are soft to the touch and usually faded and moist.

(9) *Soiled surface*.--Milkstone, rust spots, grease, or other discoloration on the surface of the cheese.

(10) *Uneven*.--One side of the cheese is higher than the other.

(11) *Wet rind*.--A wet rind is one in which the moisture adheres to the surface of the rind and which may or may not soften the rind or cause discoloration.

(12) *Wet surface (rindless)*.--A wet surface is one in which the moisture appears between the wrapper and the cheese surface.

(n) With respect to color:

(1) *Slight*.--Detectable only upon critical examination.

(2) *Definite*.--Not intense but detectable.

(3) *Acid cut.*--Bleached or faded appearance which sometimes varies throughout the cheese.

(4) *Bleached surface.*--A faded coloring beginning at the surface and extending inward a short distance.

(5) *Colored spots.*--Brightly colored areas (pink to brick red or gray to black) of bacteria growing in readily discernible colonies randomly distributed throughout the cheese.

(6) *Dull or faded.*--A color condition lacking in luster.

(7) *Mottled.*--Irregular-shaped spots or blotches in which portions are light colored and others are higher colored. Also, unevenness of color due to combining two different vats, sometimes referred to as "mixed curd."

(8) *Pink ring.*--A color condition which usually appears pink to brownish red and occurs as a uniform band near the cheese surface and may follow eye formation.

Supplement to U.S. Standards for Grades of Swiss Cheese, Emmentaler Cheese

§ 58.2577 Alternate method for determination of U.S. grades.

(a) This alternate method shall be used only when requested by the applicant. With this method, the eyes and texture and color factors are rated on the basis of trier plugs rather than by slicing the cheese. A statement shall appear on the grading certificate indicating that the alternate method was used as requested by the applicant.

(b) The following quality factors shall be rated when using the alternate method for determining U.S. grades:

- (1) Flavor,
- (2) Body,
- (3) Eyes and texture,
- (4) Finish and appearance, and
- (5) Color.

(c) Flavor and body ratings shall be determined by the methods prescribed in § 58.2573 (b) and (c).

(d) Finish and appearance ratings shall be determined as prescribed in § 58.2574.

(e) Eyes and texture, and color ratings shall be determined by drawing and examining at least two full trier plugs, withdrawn at the approximate center of one of the largest flat surface areas of the sample. For some institutional-size samples, it may not be possible to obtain a full trier plug. When this occurs, a U.S. grade may be determined from a smaller portion of a plug.

(f) The final U.S. grade shall be established on the basis of the lowest rating of any one quality factor.

§ 58.2578 *Specifications for U.S. grades when using the alternate method.*

(a) *U.S. grade A.* U.S. grade A Swiss cheese shall conform to the following requirements (See Tables I, II, IV, and V of § 58.2574):

(1) *Eyes and texture.* The cheese shall be properly set and shall possess well-developed round or slightly oval-shaped eyes which are uniformly distributed. A full plug drawn from the cheese shall be free from splits, and not appear gassy or large eyed; it may possess checks and picks within 1 inch from the surface, and may possess a limited number of checks and picks beyond 1 inch from the surface. The majority of the eyes shall be $\frac{11}{16}$ to $\frac{13}{16}$ inch in diameter. The cheese shall have at least two but not more than eight eyes to a trier plug.

(2) *Color.* Shall be natural, attractive and uniform.

(b) *U.S. grade B.* U.S. grade B Swiss cheese shall conform to the following requirements (See Tables I, II, IV, and V of § 58.2574):

(1) *Eyes and texture.* The cheese shall possess well-developed round or slightly oval-shaped eyes. A full plug drawn from the cheese shall be free from splits, and not appear gassy or large eyed; and may be moderately overset and have a limited amount of checks and picks. The majority of the eyes shall be in the range of $\frac{1}{2}$ to $\frac{13}{16}$ inch in diameter. The cheese shall have at least one but not more than ten eyes to a trier plug.

(2) *Color.* The cheese may possess, to a slight degree, a bleached surface.

(c) *U.S. grade C.* U.S. grade C Swiss cheese shall conform to the following requirements (See Tables I, II, IV, and V of § 58.2574):

(1) *Eyes and texture.* A full plug drawn from the cheese may be overset, shell or dead eyed; have splits, checks, picks, and gassy; and may be large eyed to a slight degree. The cheese is not totally blind or totally gassy.

(2) *Color.* The cheese may possess the following color characteristics to a slight degree: acid cut, colored spots, dull or faded, mottled and pink ring; and, to a definite degree, a bleached surface.